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Ingenbleek, P.; Debruyne, M.; Frambach, R.T.; Verhallen, T.M.M.

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**On Cost-Informed Pricing and Customer Value:
A Resource-Advantage Perspective on Industrial
Innovation Pricing Practices**

by

**Paul Ingenbleek,
Marion Debruyne,
Ruud T. Frambach,
Theo M. M. Verhallen**
Tilburg University

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Institute for the Study of Business Markets
The Pennsylvania State University
402 Business Administration Building
University Park, PA 16802-3004
(814) 863-2782 or (814) 863-0413 Fax

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Paul Ingenbleek

Marion Debruyne

Ruud T. Frambach

Theo M.M. Verhallen

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Author Information

Authors' Affiliations:

Paul Ingenbleek is a doctoral candidate in marketing at Tilburg University, The Netherlands.

Marion Debruyne is a doctoral candidate in marketing at the University of Ghent and the Vlerick School of Management, Belgium.

Ruud T. Frambach is a professor of marketing at the Vrije Universiteit Amsterdam, The Netherlands.

Theo M.M. Verhallen is a professor of marketing and dean of the economics faculty at Tilburg University, The Netherlands.

Correspondence:

Paul Ingenbleek
Tilburg University
Department of Marketing
PO Box 90153
5000 LE Tilburg
The Netherlands
e-mail: P.T.M.Ingenbleek@kub.nl
Phone: +31 13 4668212
Fax: +31 13 466 2875

Abstract

By empirically testing a framework of pricing strategies and their determinants in an industrial setting, Noble and Gruca (1999a) make an important contribution to the pricing literature. This contribution is especially important as pricing literature in general is criticized for lacking managerial relevance. In a commentary to the article, Cressman (1999) (1) expresses worries about the high percentage of firms that engages in cost-based pricing; (2) raises a definition question on value-based pricing; and (3) stresses that empirical pricing literature does not provide ideas on *successful* pricing practices in relation to customer value created. The aim of this study is to respond to calls for research on successful pricing practices. A perspective from resource-advantage theory (Hunt and Morgan 1995) is used to formulate expectations on the degree to which the use of information on customer value, competition and costs contributes to the success of a price decision. It is argued that the success of these practices is contingent to the relative customer value the firm has created and the degree to which this position of relative value is sustainable in the competitive market place. These expectations are empirically tested on pricing decisions with respect to the introduction of new industrial capital goods. Results show that under all circumstances cost-informed pricing makes an important contribution to the success of a price setting. It is concluded that Noble and Gruca's (1999a) findings on cost-based pricing can be complemented on two main points: (1) their results may be affected by several measurement issues, and (2) their results should be interpreted differently in the light of these new findings. By providing a theoretical foundation and empirical evidence on successful organizational pricing practices in relation to customer value, the authors hope to introduce a perspective on pricing that contributes to an understanding of how price decisions are actually made in business.

**On Cost-Informed Pricing and Customer Value:
A Resource-Advantage Perspective on Industrial Innovation Pricing Practices**

INTRODUCTION

By empirically testing a framework of pricing strategies and their determinants in an industrial setting, Noble and Gruca (1999a) make an important contribution to the pricing literature. This contribution is especially important as a lack of empirical validation of pricing theory is pointed at as a major shortcoming of pricing literature (Monroe and Mazumdar 1988). Noble and Gruca's (1999a) findings suggest that managers generally opt for pricing strategies as predicted by pricing theory. In a subsequent discussion, it became however clear that our understanding of how price decisions are actually made in business is still far from complete (Cressman 1999; Noble and Gruca 1999b). In a commentary to the article, Cressman (1999) raised three important issues regarding Noble and Gruca's (1999a) findings.

First, Cressman expresses worries about the high percentage of firms in Noble and Gruca's (1999a) sample that engages in cost-based pricing (56 %), suggesting that these firms are ignorant towards the market in price decisions. These worries reflect the general belief in marketing that cost-based pricing is a bad practice (e.g. Dean 1950; Nagle and Holden 1990). Although Coe (1990) shows that an increase of cost-based pricing goes hand in hand with a decrease of innovation strategies, the lack of effectiveness of cost-based pricing has so far been an assumption that is never tested. Second, Cressman raises a definition question: What is value(-based) pricing? Does value-based pricing refer to a pricing strategy as Noble and Gruca (1999a) conceptualize it in their framework, or does

value-based pricing refer to the use of information on customer value in a pricing decision? Third, Cressman stresses that empirical pricing literature does not provide studies on *successful* pricing practices in relation to the firm's efforts to create customer value: "How is it possible that we advocate managers adopt a market orientation, but the literature fails to link pricing practices with the drivers of customer needs? If pricing practice is seen as the means through which managers "harvest" the "seeds" planted in a market-oriented strategy process, why are there no pricing practices based on the value delivered to customers in the marketing literature?" (Cressman 1999, p. 456).

The third issue is of special importance because it does not relate to research findings or definitions of concepts, but to the relevance of the research question itself. Rather than examining to what extent firms base prices on customer value, costs, or other information, Cressman actually argues that researchers should examine under which conditions of created customer value the use of this information leads to successful pricing decisions. This comment is in line with prior calls for research on how firms set prices. Monroe and Mazumdar (1988) see a lack of understanding of how price decisions are actually made as a major shortcoming in pricing literature, while Bonoma, Crittenden and Dolan (1988) even suggest that it brought about a lack of managerial relevance of pricing literature in general. Cressman's critique led Noble and Gruca (1999b, p. 459) echo these calls, stating that: "Research on successful pricing process should be a major priority for future research. In such a research endeavor, the definitions of customer value and value-based pricing should be clear enough to avoid the potential for confusion between academic and practitioner users of the results."

In this paper, we aim to contribute to answering Noble and Gruca's (1999b) call, taking into account Cressman's (1999) useful suggestions. In particular, we will make three contributions to empirical pricing literature. First, our study is the first to examine the success of three pricing practices with respect to different types of information used in a pricing process (respectively on costs, customer value and competition). Second, we will do so in relation to the relative customer value offered by new products and the degree of sustainability of the value, which we base on the resource-advantage theory of competition (Hunt and Morgan 1995; 1997). Third, our study comes across several measurement issues that may have influenced Noble and Gruca's (1999a) findings, as well as other prior surveys on pricing practices. Like Noble and Gruca (1999a) we present data from industrial capital industries, which can be used for a possible reinterpretation on their findings on the use of cost information in pricing. Our results reveal that the success of information on value, competition and costs is contingent to the relative value offered by a product, as well as on the degree to which value is sustainable in the market. This suggests that there is no general "bad" or "best" practice with respect to the type of information used in price decisions.

In the next section we will introduce the concepts included in our study. Next, we use resource-advantage theory (Hunt and Morgan 1995) to formulate expectations on the conditions under which information on costs, competition and customer value contributes to successful price decisions. The expectations are tested on 77 introductions of industrial capital goods. Methods are explained and results presented. In the discussion section we will discuss why Noble and Gruca's (1999a) results may be influenced by several

measurement issues, and how they should be interpreted in the light of the findings obtained in our study. We conclude with some interesting avenues for future research.

CONCEPTS

Pricing practices should be distinguished from pricing objectives and pricing strategies. Pricing objectives refer to what the firm is trying to accomplish with its price setting, and pricing strategy refers to the means by which a pricing objective is to be achieved (Noble and Gruca 1999a). Pricing practices refer to the activities carried out by the firm's managers in order to arrive at a price decision.¹

The empirical pricing literature generally distinguishes among three types of pricing practices (e.g. Piercy 1981; Tzokas, Hart, Agrouslidis and Saren 2000; Udell 1972), respectively based on the use of information regarding (1) customer value (following Hunt and Morgan (1995), defined as the sum of total benefits customers perceive they will receive if they accept the market offering); (2) competition (here defined as prices of competitors' products in the light of their relative market positions); and (3) costs (here defined as the variable and fixed costs with respect to the development, production and marketing of the new product). These different types of information are important because they represent the basic elements in the internal and external environment of the firm on the basis of which prices can be set.

Pricing practices are carried out in the context of a pricing process. The pricing process refers to a sequence of activities that lead to a price decision. Following Day

¹ Prior contributions to empirical pricing literature (e.g. Tzokas, Hart, Agrouslidis and Saren 2000) often use the term pricing methods to indicate the activities by which firms arrive at price settings. Since the term pricing methods is often interpreted as mutually exclusive methods, we prefer the term pricing practices,

(1994) we consider pricing to be an organizational process of information gathering, exchange and interpretation, that involves discussion and negotiations between different business functions such as marketing, production and finance. This view on the pricing process is in line with qualitative work on pricing in organizations (e.g. Bonoma, Crittenden and Dolan 1988; Hague 1971; Foxall 1972; Pearce 1956).

In the context of a pricing process, firms are likely to use all three types of information to some extent, rather than focus on a single one. This implies that the use of customer value, competition and cost information, should be seen as something of degree, rather than three mutually exclusive categories. For this reason we will use the terms cost-informed, competition-informed and value-informed pricing, instead of cost-based, competition-based and value-based pricing. This conceptualization is in line with Noble and Gruca's (1999a) finding that firms combine cost-based pricing with market-based pricing strategies.

[Insert Figure 1]

Like any other organizational process (Day 1994), a pricing process implies that certain practices may be more successful than others. As such, we expect that value-, competition-, and cost-informed pricing will affect pricing success, as indicated in Figure 1. Since a pricing process generally starts with determining pricing objectives (Diamantopoulos 1991; Hague 1971), we define pricing success accordingly as the degree to which pricing objectives are achieved.

The degree to which these practices contribute to pricing success is contingent to the customers value context. We include two specific dimensions: product advantage and

which is in line with our view on pricing as an organizational process that involves organizational practices in which organizations engage to some degree (Day 1994).

competitive intensity. Product advantage refers to the sum of total benefits customers perceive they will receive compared to competitor's products. As such, it refers to the actual relative value the product offers customers at its launch. Competitive intensity represents the degree to which product advantage is likely to be sustainable. A continuous stream of new product introductions and other competitive actions, is likely to decrease the value of the product as compared to competitors' products. Creation of customer value and the competitive pressures that erode it, have been major fields of interest in recent strategic marketing and new product development literatures (e.g. Atuahene-Gima 1995; Day 1994). In the next section we will formulate expectations on how these dimensions influence the relationship between value-, competition-, and cost-informed pricing and pricing success.

PRICING IN THE LIGHT OF RESOURCE-ADVANTAGE THEORY

According to resource-advantage theory (Hunt and Morgan 1995; 1997), firms strive for superior financial performance by enabeling its resources to capture a position of competitive advantage in a certain market or market segment. This position is captured if two conditions are satisfied: (1) the firm creates more customer value than competitors do, and (2) the firm has costs equal to or lower than competitors. This situation is represented in Figure 2 by cells 2, 3 and 6 (see Hunt and Morgan 1995 for a full explanation of the competitive position matrix). Firms can improve their competitive position by introducing product innovations to the market. Proactive innovations should be distinguished from reactive innovations. Proactive innovations offer superior customer

value whereas reactive innovations offer customer value equal to competitors (Hunt and Morgan 1997).

[Insert Figure 2]

Apart from the fact that the price setting determines the profit margin and thus the degree to which costs are covered, price affects the customer's value perception of the market offering. If customers perceive the product's price as too high given the benefits offered, they are likely not to purchase the product. If they perceive the price as too low, this might result in a negative perception of the actual benefits that the product has to offer them (Monroe 1991). In order to be successful, a price setting thus should be in line with the customer's value perception of the product and it should cover costs to an extent that is acceptable to the firm.

All three information types may positively affect the success of a price setting, but the degree to which they contribute to pricing success depends on the competitive position of the product. Value-informed pricing contributes to an understanding of the benefits of the product as perceived by the customer. This information is especially relevant if the product offers superior value, i.e. the value offered by the product is not comparable to any other product on the market. Competition-informed pricing contributes to an understanding of competitors' price settings and the degree to which their products will compete directly with the product to be launched. This will contribute more to pricing success if the product offers customer value equal to competitors' products. Cost-informed pricing contributes to an understanding of the degree to which costs are covered by a price setting. This information becomes especially important when the product ends

up in a situation in which it offers less value than competitors' products and the firm will have to drop the product's price in order to remain a position of relative advantage.

Table 1 distinguishes between three contexts with respect to the customer value offered by a new product and the degree to which value is likely to be sustainable: (1) increasing product advantage; (2) increasing competitive intensity; and (3) increasing product advantage *and* competitive intensity. In terms of Figure 2 product advantage represents the relative customer value dimension. Competitive intensity represents the degree to which a position of relative value captured by an innovation is likely to be sustained. For example, a product representing a high degree of advantage that contributes to a competitive position in cell 3 at its launch, is in a highly competitive market pushed to cell 2 when a competitor launches a product that is equal in terms of value, or even to cell 1 when a competitor introduces a product of higher value. The situation in which both product advantage and competitive intensity are included, simply represents the sum of both.

[Table 1]

First, for new products that offer equal value compared to competitors' products - reactive innovations -, the customer already has a perception of the value offered by competitors' products. In order to set prices in line with the customer's perception of the product, the firm will need information on competitors' price settings. For new products that offer superior value - proactive innovations - the firm will need information on the unique superior value of the product to set the price in line with the customer's perception. Thus we expect that under increasing product advantage, value-informed pricing contributes more to pricing success and competition-informed pricing contributes less to pricing

success. Cost-informed pricing is expected not to be affected by increasing product advantage. A stronger understanding of costs is important if the product offers lower customer value than competitors' products. In this situation the product only contributes to a competitive position if it can be offered to customers at lower prices. Products that offer lower value than competitors' products have however little chance of improving a firm's competitive position, and thus are likely not to be introduced to the market (Hunt and Morgan 1997).

Second, in a situation of increasing competitive intensity, there is danger that the relative value of the product can not be sustained because competitors are likely to introduce products with equal or even superior value to the market. In this situation the product is likely to be pushed to a position of lower value, in which it only contributes to a competitive position if the price can be dropped. In order to do so, the firm will need a thorough understanding of its costs position. Thus, under increasing competitive intensity, cost-informed pricing is expected to contribute more to pricing success. Value-informed pricing is expected to contribute less to pricing success under this condition, since the customer's perception of the value offered by the product is likely to be distorted by competitive actions. Competition-informed pricing will not be affected by increasing competitive intensity, since competitors' products on which the price of the new product is based, are affected in the same way by competitive intensity as the product for which a price decision should be made.

Third, in a situation of increasing product advantage and competitive intensity, value-informed pricing will not be affected. Although the product has an advantage in terms of customer value and value-informed pricing thus contributes more to pricing success, this

effect is equaled by the intense competition under which value-informed pricing contributes less to pricing success. Because, the product does have an advantage and competition-informed pricing is not affected by the intensity of competition, competition-informed pricing will be decreasingly successful. Finally, because cost-informed pricing becomes more successful under increasing competitive intensity and it is not affected by the degree of product advantage, cost-informed pricing becomes increasingly successful under conditions of increasing competitive intensity and product advantage.

METHOD

Data Collection and Sample

Like in Noble and Gruca's (1999a) survey, a questionnaire was developed focussing on the latest new product development and launch in which the respondent's company had been involved. This approach avoids the critique on studies examining overall pricing objectives and strategies (Diamantopoulos 1991). Questionnaires were mailed to the marketing or general manager in the company. We asked respondents to indicate on a 10-point scale to what degree they were involved in the price setting of the new product. Nearly 80% of the respondents rated this degree with a 6 or higher, suggesting that the questionnaire generally targeted the appropriate respondents within companies. Further we examined correlations between the degree to which respondents were involved in the price setting and the measures included in our study. No significant correlations were found, suggesting that a possible bias in our results as a consequence of respondent-selection within companies is unlikely.

A questionnaire was mailed to 590 firms drawn from a comprehensive Belgian industry database. The respondents were contacted by telephone prior to the mailing in order to request co-operation. After receipt of the questionnaire, a recall-phone call was made and repeated every two weeks. Respondents were reminded up to three times. A total of 78 questionnaires was finally returned, representing a response rate of 13.2 %. One questionnaire was removed from the sample since it had too many missing values. Overall, considering the complexity, sensitivity and length of the questionnaire, the response rate is in line with other management surveys (Diamantopoulos and Schlegelmilch 1996; Harzing 2000). We tested nonresponse bias by comparing early, average and late respondents (Armstrong and Overton 1977). In t-tests for all variables included in this study, no significant differences in the mean responses were found.

Our sample consists of firms from the electronics and engineering industries. This sample is based on a subset of the industries examined by Noble and Gruca (1999a), who focus on firms producing industrial capital goods. The sample of electronics and engineering firms is to a large extent comparable to the sample used by Noble and Gruca (1999a) except for the farm, mining, (industrial) trucks and tractors, aircraft and railroad equipment industries. The industries that are included in our sample, cover 73 % of the industries in Noble and Gruca's (1999a) net sample. Since it is the objective of our study to test the effectiveness of factors on which prices are based, we conducted a series of interviews to select industries in which firms generally do not suffer from a high degree of demand uncertainty which may affect the degree to which prices are based on specific factors (Noble and Gruca 1999a).

Measurement

To measure value-, competition-, and cost-informed pricing as well as pricing success, new multiple-item measures were developed. After defining the domain of the constructs, an item pool was created on the basis of an extensive literature review and interviews in various industries (Churchill 1979). Items were measured using a 10-point scale, the upper-end indicating “played a major role in price setting”, and the lower-end indicating “was not important at all in price setting”. Many prior studies use mutually exclusive category indicators to measure pricing practices (e.g. Piercy 1981; Udell 1972), which do not accurately tap the degree to which different kinds of information are used. Also single item measures (Tzokas et al. 2000) and summated scales (Noble and Gruca 1999a) are unlikely to accurately tap the information used in a pricing process, for two reasons. First, like the domains of many concepts in social sciences, the domains of value-, competition- and cost-informed pricing as defined in this study, are too broad to be measured by a single item (Churchill 1979). Second, asking managers about the information used in a pricing process may be prone to a social response bias, since managers are likely to justify prices on basis of costs (Foxall 1972; Pearce 1956).

In order to minimize the risk of a social response bias, items on customer value, competition and cost factors were presented in the questionnaire in random order, also including a number of additional items not measuring any of the three groups of pricing factors included in this study. As a final check on a possible social response bias in value-, competition- and cost-informed pricing, we conducted 10 interviews. In 5 interviews we asked managers to fill out a questionnaire with purified scales of which the items measuring factors on which prices are based were presented in random order. After they

finished, we asked them to describe the pricing process of the new product, as well as to indicate what kind of information they used and on what information the final price setting is based, using the interview techniques advised by Pearce (1956) and Foxall (1972). In the other 5 interviews we followed the same procedure but started with the open questions and finished with the questionnaire. In all 10 interviews, the stories told by the managers generally fit the answers to the questionnaire. This leads us to conclude that a social response bias is not a problem in our scales.

With respect to pricing success, measured as the degree to which pricing objectives are achieved, firms may set multiple objectives, but generally set a profit and an output objective of either a maximizing or satisficing nature (Diamantopoulos 1991). For this reason we included scale items regarding the degree to which profit and output objectives of both a maximizing and satisficing nature are achieved. Since these items loaded on one factor we constructed a general scale of achieving price objectives as the dependent variable in our study. Items on the achievement of pricing objectives were also measured on a 10-point scale, the lower end indicating “wasn’t reached at all” and the upper end indicating “was completely reached”. Measures on product advantage and competitive intensity were derived from Atuahene-Gima (1995).

After collecting the data, all measures used in this study were subjected to purification using factor analysis (Churchill 1979). Items that had very weak loadings or loaded on more than one factor were eliminated. To enhance discriminant validity, items that relate directly to pricing strategies as studied by Noble and Gruca (1999a) were included, like the degree to which the price is based on learning curve effects (skimming), penetration, or product line. These items generally loaded on more than one factor which supports our

view that pricing strategies are related to, but different from, pricing processes. Next, the reliability coefficient alpha of each measure was calculated and item-to-total correlations were inspected. Items with low correlations were eliminated. The final scales closely represent the concepts' domains as they were initially defined.

The use of 10-point scales has the advantage that it is the most common rating scale in Belgium, for instance in the education system. It has a disadvantage in that extreme scores may strongly impact the mean of all scale items. For this reason we standardized item scores before calculating the scale means, which satisfies the condition that all scale items are equally important (Churchill 1979). All scales used in this study are reported in the appendix. A correlation matrix of the measures is reported in Table 2.

[Insert Table 2]

Theory Testing Approach

The three situations of new product launch were each tested in a moderating regression model, each including simple effects of all components, as well as multiplicative interaction terms of independent and proposed moderator variables (e.g. value factors multiplied by product advantage) (Irwin and McClelland 2001). Significant interaction terms suggest the existence of pure moderators, which implies that the moderator variable (product advantage, competitive intensity) modifies the form of the relationship between the independent variable (e.g. cost-informed pricing) and the dependent variable (pricing success).

RESULTS

The results of the three moderating regression analyses are presented in Table 3.

[Table 3]

The simple effects suggest that value- and cost-informed pricing generally contribute to pricing success, whereas competition-informed pricing generally has no effect. These findings are in line with resource-advantage theory (Hunt and Morgan 1995) which suggests that relative customer value and relative costs are the dimensions that determine a competitive position. The simple effects also show a significant relationship between competitive intensity and pricing success. This is in line with Diamantopoulos and Mathews' (1994) finding that pricing objectives depend on the firm's environment. More specifically, we explain the effect as that firms in highly competitive environments are more satisfied with achieving price objectives than firms in stable environments and thus report higher scores on pricing success.

With respect to our findings on increasing product advantage, we find a significant positive effect for value-informed and a significant negative effect for competition-informed pricing. We find no effect for cost-informed pricing.² These findings confirm our expectations.

² Sharma, Durant and Gur-Arie (1981) argue about the existence of a different type of moderating variables, so called homologizers, for which one should check when no effect is found in a moderating regression analysis. The existence of homologizers can be examined in a subsample analysis on basis of a median split, under the condition that there are no significant correlations between the independent or moderating variable and the dependent variable. Product advantage is found to be a significant homologizer in the relationship between cost-informed pricing and pricing success ($r_{\text{low}} = .33$, $r_{\text{high}} = .09$, $z = 5.64$, $p < .000$). This implies that cost-informed pricing contributes more to pricing success in situations of low product advantage than in situations of high product advantage. This doesn't mean however that cost-informed pricing becomes a more successful practice when product advantage increases. As such, this finding doesn't reject our hypothesis. Because of a significant correlation between competitive intensity and pricing success, we cannot check for homologizers in the analysis testing the moderating effect of competitive intensity. In the third model, we tested the existence of a homologizer of product advantage times competitive intensity in the relation between value-informed pricing and pricing success. Here, no significant homologizer was found ($r_{\text{low}} = .35$, $r_{\text{high}} = .40$, $z = 1.17$, not significant).

In situations of increasing competitive intensity, we find a negative effect for value-informed, a positive effect for cost-informed and no effect for competition-informed pricing, which confirms our expectations.

In situations of increasing product advantage and competitive intensity, we find no effect for value-informed, a negative effect for competition-informed and a positive effect for cost-informed pricing.

DISCUSSION

The objective of our paper is to improve our understanding on successful practices by which firms arrive at price decisions, which has been repeatedly emphasized as a major gap in empirical pricing literature (Bonoma, Critenden and Dolan 1988; Monroe and Mazumdar 1988; Noble and Gruca 1999b). Specifically, we focussed on the degree to which different types of information contribute to pricing success under different conditions of customer value created and the degree to which customer value can be sustained. Our results show that the success of using information on customer value, competition and costs in price decisions, is contingent to the customer value created and the degree to which it can be sustained. This suggests that the success of pricing practices is not as straightforward as sometimes expressed (e.g. Cressman 1999). In addition, we note that prior surveys on the use of information in price decisions may suffer from several measurement issues (Coe 1990; Noble and Gruca 1999a; Piercy 1981; Tzokas, Hart, Argouslidis and Saren 2000; Udell 1972).

Our results obtained from price decisions of new product introductions in markets for industrial capital goods, suggest that value-informed pricing is increasingly successful if

the product is superior to competitors' products in terms of delivered customer value, and if this position of superiority is sustainable. Value-informed pricing becomes decreasingly successful under increasing competitive intensity. Competition-informed pricing becomes increasingly successful if the product matches competitors' products in terms of customer value: a so called "me-too" product. If the product is superior to competitors' products in terms of value, competition-informed pricing becomes decreasingly successful. Finally, cost-informed pricing becomes more successful if the customer value represented by the product is unlikely to be sustainable. In this situation, the firm should be prepared for future price drops. However, we find no conditions under which cost-informed pricing becomes a decreasingly successful pricing practice.

In addition, our study comes across four measurement issues that may have affected Noble and Gruca's (1999a) findings as well as findings from other studies. First, pricing practices are different from pricing strategies and thus should not be included in the same measurement instrument (Coe 1990; Noble and Gruca 1999a). Second, the use of all three kinds of information on the basis of which prices can be calculated (customer value, competition and costs) should be included. Including only cost information in a study as Noble and Gruca (1999a) do, will lead to an incomplete picture of the degree to which firms neglect market information in their price decisions. Third, in the context of a pricing process, firms are unlikely to rely exclusively on a single kind of information as measured by multiple exclusive categories (Coe 1990; Piercy 1981; Udell 1972). Also a summated scale as used by Noble and Gruca (1999a) does not provide data on the basis of which firms can be compared in the degree to which they use cost information, since 44 % of their sample picked categories other than cost-based pricing. For this reason we

developed multiple-item measures on the concepts of cost-informed, value-informed and competition-informed pricing, which indicates the degree to which different kinds of information are used to arrive at a price decision. Fourth, measuring the degree to which firms use different types of information in a pricing process might be prone to a social response bias. Managers tend to justify prices in terms of costs in order to leave an impression of "fair" pricing practice (Pearce 1956; Foxall 1972).

When these measurement issues and the contribution of cost information to pricing success are considered, the high percentage of firms that indicated that they engage in cost-based pricing in Noble and Gruca's (1999a) research does not seem surprising after all. Their finding probably doesn't mean that these firms are ignorant of their market, it probably should be interpreted contrary: these firms think about their competitive position for which a clear understanding of their cost positions is a necessary condition for the product to survive on the market. Our findings are in line with Noble and Gruca's (1999a) finding that demand uncertainty antecedes cost-based pricing. In situations of high competitive intensity, the demand for the new product becomes difficult to predict. Under these circumstances firms don't just rely increasingly on cost information, it also helps them to make successful price decisions.

As suggested by Nagle and Holden (1995) and Cressman (1999) our findings suggest that creating customer value, followed by a price decision on basis of customer value information, is a route to pricing success. However, there is no simple rule that states that pricing success will improve if prices are based more on customer value information. Also the degree to which value can be sustained is an important consideration. In situations in which firms have little competition, or value can be sustained otherwise - for

instance through protection by patents - a combination of creating customer value and value-informed pricing will pay off. Consistent with Nagle and Holden's (1995) arguments, we find that new products that intend to match the value offered by competitors, are best priced on basis of competitor information. For example, this seems to be a safe approach for companies following strong market leaders in highly concentrated markets. This situation is not unlikely in markets of industrial capital goods. The finding that the use of cost information has no negative effect on pricing success in situations in which the firm has created superior customer value, and that it even has a positive effect in situations of intense competition, shines a new light on the results of prior studies. For instance, Coe (1990) interpreted an increase of cost-based pricing throughout the 1980s as a consequence of a parallel decrease of innovation strategies. Our results suggest that the increase of cost information of pricing can also be caused by the growing competition during that decade.

By designing a study on new product pricing from a perspective of nonprice competition which is offered by resource-advantage theory (Hunt and Morgan 1995), we hope we have to some extent filled the gap in empirical pricing literature on the lack of understanding how price decisions are actually made in business, and why managers filled out questionnaires of prior pricing surveys the way they did.

Limitations and Future Research

This study also has some limitations that present opportunities for future research. First, our study is limited to selected industries and in its geographical scope. We limited our sample to a subset of industries examined by Noble and Gruca (1999a), and restricted our sample to Belgian companies, which doesn't allow us to examine cross-cultural

differences. Second, our study is limited to new product price settings. Although this is probably the most important and most complicated price decision (Shapiro and Jackson 1978), findings are not generalizable to permanent or short-term price changes.

Our study is theoretically limited to dimensions of product advantage and competitive intensity, that determine the different situations of product launch we examined. Following the rationale of resource-advantage theory (Hunt and Morgan 1995), also relative product costs may impact the effectiveness of factors on which prices are based. This is an interesting avenue for further research. Future research may also focus on other aspects of the pricing process, such as the degree to which it is formally planned, the involvement of different business functions, and its relationships with actual resources, such as market orientation. Finally, future research may test the generalizability of findings presented in this study in contexts other than industrial capital goods.

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Figure 1: Conceptual Framework

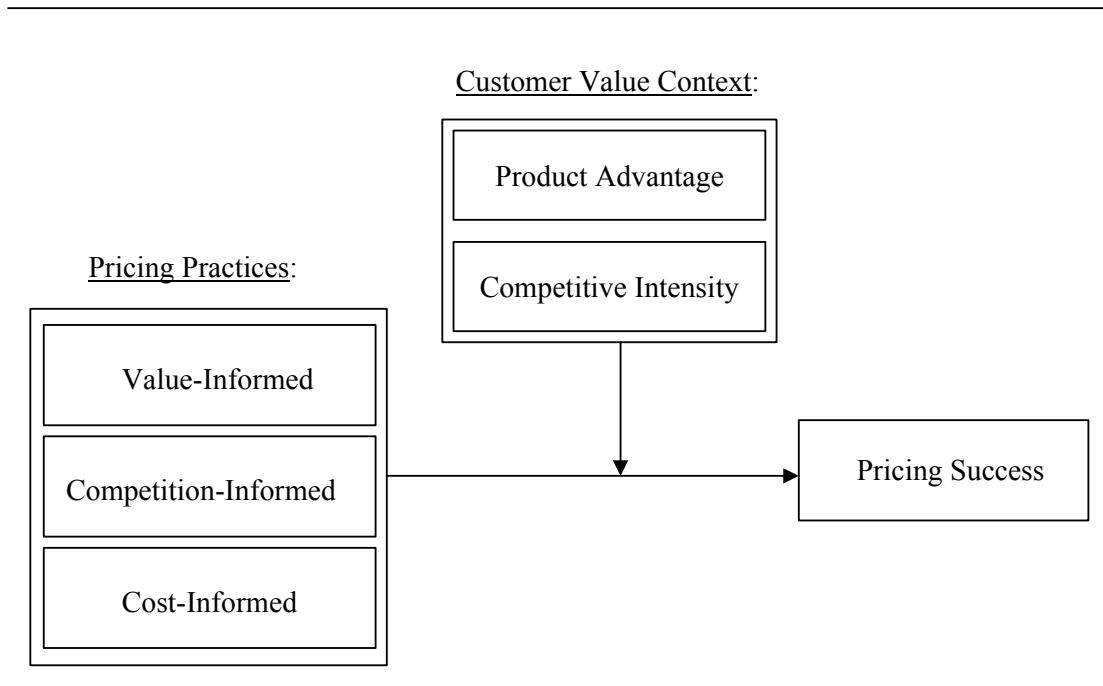


FIGURE 2
Competitive Position Matrix ^a

		Relative Resource-Produced Value		
		Lower	Parity	Superior
Relative Resource Costs	Lower	1 Indeterminate Position	2 Competitive Advantage	3 Competitive Advantage
	Parity	4 Competitive Disadvantage	5 Parity Position	6 Competitive Advantage
	Higher	7 Competitive Disadvantage	8 Competitive Disadvantage	9 Indeterminate Position

^aRead: The marketplace position of competitive advantage identified as Cell 3 results from the firm, relative to its competitors, having a resource assortment that enables it to produce an offering for some market segment(s) that (a) is perceived to be of superior value and (b) is produced at lower costs.

Source: Hunt and Morgan (1997)

TABLE 1
Expectations on the Success of Pricing Practices in Different Situations of Value Creation and Sustainability^a

Customer Value Context:	Increasing product advantage	Increasing competitive intensity	Increasing product advantage and competitive intensity
Pricing Practice:			
Value-Informed	+	-	0
Competition-Informed	-	0	-
Cost-Informed	0	+	+

^aRead: (cell 1) the higher product advantage, the more value-informed pricing contributes to pricing success.

TABLE 2
Correlation Matrix of Measures^a

	(1)	(2)	(3)	(4)	(5)	number of items	Cronbach's Alpha
(1) Value-Informed						5	.81
(2) Competition-Informed	.01					6	.91
(3) Cost-Informed	.22	.04				4	.75
(4) Product advantage	.36	-.24	.01			3	.74
(5) Competitive intensity	.03	.34	.26	-.10		3	.73
(6) Pricing Success	.37	.08	.21	.15	.39	7	.89

^a Correlations above $r = .24$ are significant at $p < .05$.

TABLE 3
Results of Moderating Regression Analyses (Standardized Coefficients)
Dependent variable: Pricing Success

	Product Advantage	Competitive Intensity	Product Advantage and Competitive Intensity
<u>Simple effects:</u>			
Value-informed pricing	.55 ^a	.25 ^c	.39 ^b
Competition-informed pricing	-.04	.02	.08
Cost-informed pricing	.29 ^b	.22 ^d	.17
Product advantage	.09		.18
Competitive intensity		.31 ^b	.24 ^d
Product advantage * competitive intensity			-.16
<u>Interaction effects of product advantage with:</u>			
Value-informed pricing	.32 ^c		
Competition-informed pricing	-.33 ^b		
Cost-informed pricing	.06		
<u>Interaction effects of competitive intensity:</u>			
Value-informed pricing		-.37 ^b	
Competition-informed pricing		-.03	
Cost-informed pricing		.21 ^c	
<u>Interaction effects of product advantage * competitive intensity, with:</u>			
Value-informed pricing			-.14
Competition-informed pricing			-.28 ^c
Cost-informed pricing			.31 ^c
df	69, 7	69, 7	67, 9
F	5.82 ^a	6.78 ^a	5.00 ^a
Adjusted R ²	.31	.35	.32

a: p < .001

b: p < .01

c: p < .05

d: p < .1

APPENDIX: SCALE ITEMS AND RESULTS OF FACTOR ANALYSIS

Pricing Practices

To what degree were the following factors included in the price setting process of the new product? In other words: to what extent did you take into account the following elements while determining the price of the new product?

Value-Informed Pricing (Alpha = .81) (Eigen value = 3.05)	Factor loading
The advantages of the product compared to competing products	.83
The customer's perceived value of the product	.63
The advantages the new product offers to the customer	.72
The balance between advantages of the product and price	.64
The advantages of the product compared to substitutes	.77

Competition-Informed Pricing (Alpha = .91) (Eigen value = 6.52)	Factor loading
The price of competing products	.78
The competitor's current price strategy	.90
The estimation of competitor's strength to react	.81
The market structure (number and strength of competitors)	.87
The degree of competition on the market	.79
The competitive advantages of competitors on the market	.76

Cost-Informed Pricing (Alpha = .75) (Eigen value = 2.41)	Factor loading
The variable costs of the product	.82
The price necessary for break-even	.66
The investments in the new product	.75
The share of fixed costs in the cost price	.75

Product advantage (Alpha = .74) (Eigen value = 1.61)	Factor loading
Please indicate to what degree the following statements are typical for the new product:	
The product offered higher quality than competing products (Atuahene-Gima 1995)	.83
The product solved problems customers have with competing products (Atuahene-Gima 1995)	.64
The product was very innovative and substituted an inferior alternative (Atuahene-Gima 1995)	.78

Competitive Intensity (Alpha = .73) (Eigen value = 1.49)	Factor loading
Please indicate to what degree the following statements are typical for the market in which the new product is launched:	
Intense price competition (Atuahene-Gima 1995)	.88
Strong competitor sales, promotion and distribution systems (Atuahene-Gima 1995)	.63
Strong and good quality competing products or services (Atuahene-Gima 1995)	.55

Pricing Success (Alpha = .89)

Factor loading

(Eigen value = 5.16)

To what extent were the following price objectives effectively achieved with the new product:

Achieving a certain market share	.68
Maximizing market share	.74
Maximizing profits	.73
Achieving a certain pay back period	.77
Achieving a predetermined ROI	.82
Realize a certain growth in profits	.83
Maximize the profitability of the product over the entire life cycle	.69

Results of factor analysis are reported after a varimax rotation.